## LALIT NARAYAN MITHILA UNIVERSITY, DARBHANGA (BIHAR)

LECTURE NO.: 12 **DATE - 20th JULY, 2020** 

SUBSIDIARY PART - II

BY: DR RANJANA

**GROUP C - PLANT PHYSIOLOGY** 

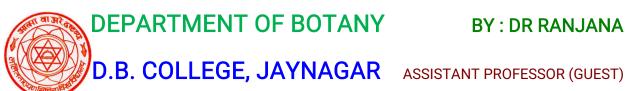
## **DIFFUSION - II**

In the process of photosynthesis in land plants, CO2 from the atmosphere diffuses through the stomata and intercellular spaces of the mesophyll tissue. It then gets dissolved in the wet cell walls, and diffuses through the medium of solution towards the chloroplasts present in the palisade and spongy parenchyma where it takes part in the metabolism to form carbohydrate. As long as CO2 is used up, a gradient of diminishing concentration is maintained and thus the process of diffusion will be continuous.

In the case of oxygen liberated during photosynthesis, the diffusion gradient is in the opposite direction, i.e., the dissolved O2 diffuses away from the chloroplast surfaces and on reaching the wet cell walls, it will be liberated as a gas. The O2 concentration in the the intercellular spaces is higher than that in the outside atmosphere and, therefore, O2 passes out through the

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LALIT NARAYAN MITHILA UNIVERSITY, DARBHANGA (BIHAR) stomatal apertures.

In the same manner, during respiration, exchange of gases between the living cells and the atmospheric air takes place through the stomata and the lenticels along decreasing concentration gradient of O2 towards respiring surfaces in protoplasm, and of CO2 away from these surfaces. Gaseous diffusion tends to equalise the concentration of gases (O2 and CO2) inside and outside the leaf but since the rate of photosynthesis is much greater (about 7 times) than the rate of respiration, the O2 concentration in the intercellular spaces of green shoots is greater than the concentration of CO2 outside. Similarly in the respiratory experiments when the rate of respiration is enhanced by raising the temperature, the CO2 concentration in the internal atmosphere of the plant tissue is higher than that in the outside air.

During transpiration water evaporate from the wet cell walls of the turgid mesophyll cells and passes into unsaturated atmosphere of the intercellular spaces. From the intercellular spaces the water vapour diffuses into unsaturated outside atmosphere.

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